Workshop on Artificial Propagation & ESU Viability

Agenda

- Welcome & Introductions
- Tasks & instructions
- Roles and Policy Direction
- Hatchery Listing Policy

- Evaluation Worksheet
- SRD Hatchery Inventory & Effects Evaluation

- ESU assessments

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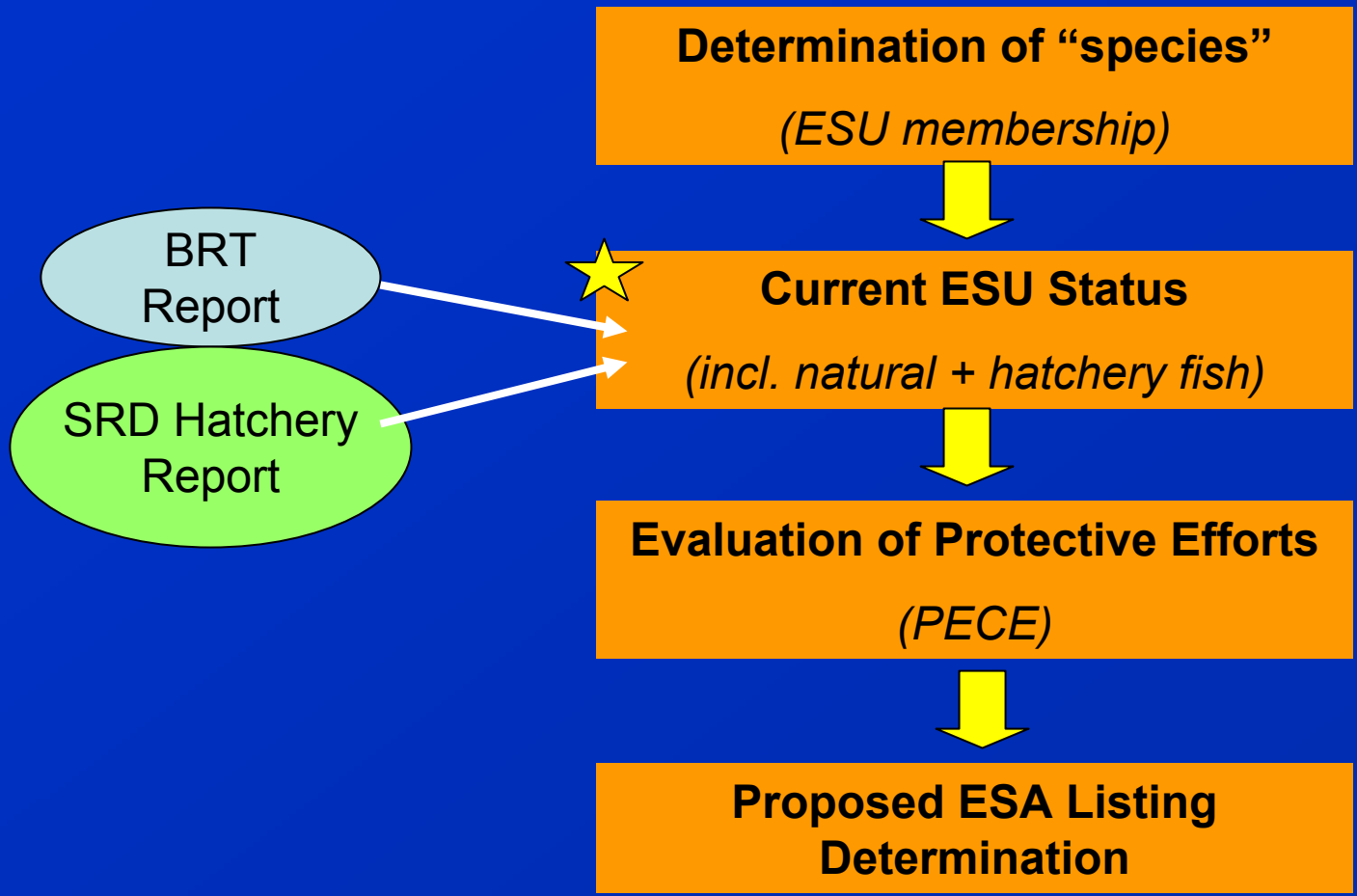
Where are we in the status review process?



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SRD Hatchery Report

(1) **ESU Membership (Based on SSHAG, with minor modifications)**
(2) **Preliminary evaluation of effects on VSP risks at the population level** (i.e., distributed matrices).
(3) **Preliminary evaluation of effects on VSP risks at the ESU-level.**

XX ESU		After taking into consideration the contributions of within-ESU hatchery programs, the VSP risks to the entire ESU		
Viability Criteria	BRT VSP Risk Score	Decrease	Neutral or Uncertain	Increase
Abundance	*3.7 (2-5)*	✓		✓
Productivity	*3.1 (2-5)*		✓	
Spatial Structure	*3.6 (3-4)*			✓
Diversity	*3.2 (2-4)*			

(4) **Preliminary assessment of extinction risk for ESU in-total.**

	Effects of within-ESU hatchery programs on the likelihood of extinction of the entire ESU.		
	"In danger of extinction throughout all or a significant portion of its range"	*"Likely to become endangered within the foreseeable future throughout all or a significant portion of its range"*	Neither *"in danger of extinction ..."* or *"likely to become endangered ..."*
BRT's findings for the ESU natural components	*21%*	*70%*	*9%*
Status of the entire ESU		✓	

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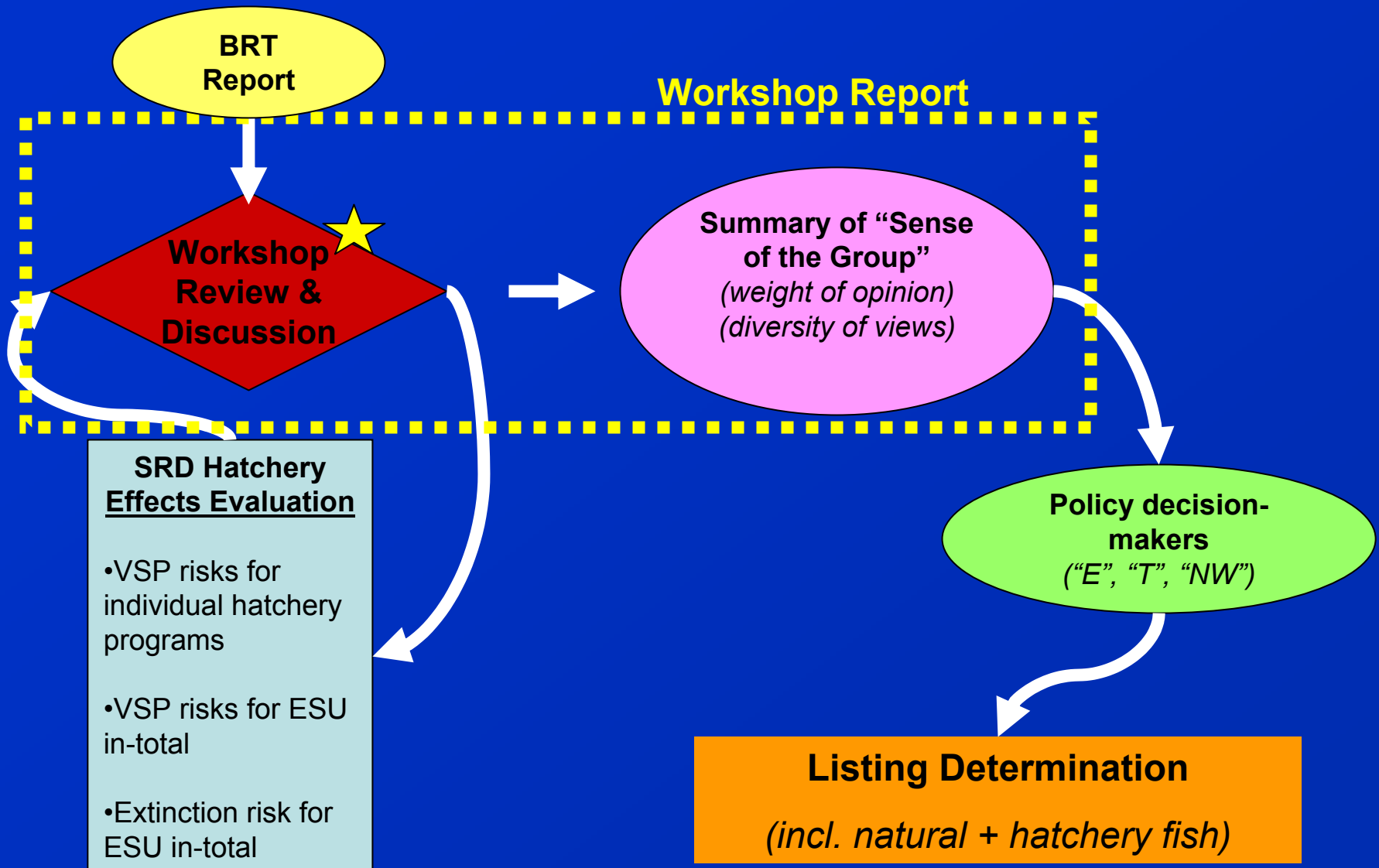
Workshop Tasks



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Workshop Tasks

(1) Overview BRT's findings
(2) Overview ESU membership
(3) Review and discuss SRD's preliminary evaluations:
    - individual hatchery programs on VSP risks at the population level
    - VSP risks at the ESU level
    - Extinction risk for the ESU in-total.
(4) Capture sense of the group and diversity of views

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Roles & Policy Direction

Roles

- Workshop participants are to help ensure that the BRT's findings are considered, and that a diversity of perspectives is considered regarding the contribution of artificial propagation to the status of ESUs as-a-whole.
- PRD & SRD will summarize and report the weight and diversity of opinions expressed.

Policy Direction

- Please confine discussion of the draft HLP to clarification of its interpretation

Hatchery Listing Policy

(1) Reaffirmation of ESU policy.

- "In delineating an ESU to be considered for listing, NOAA Fisheries will identify all populations that are part of the ESU including populations of natural fish (natural populations), populations of hatchery fish (hatchery populations), and populations that include both natural fish and hatchery fish (mixed populations). Hatchery fish that are genetically no more divergent from a natural population in the ESU are considered part of the ESU, will be considered in determining whether an ESU should be listed under the ESA, and will be included in any listing of the ESU."

- "Status determinations for Pacific salmonid ESUs will be based on the likelihood of extinction of an entire ESU."

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Application of Hatchery Listing Policy

- Status determinations will be based on the likelihood of extinction of an *entire* ESU, including:
  - "natural populations" (i.e., naturally spawning populations with minimal hatchery influence)
  - "hatchery populations" (i.e., isolated hatchery programs)
  - "mixed populations" (i.e., integrated natural and hatchery production)

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Hatchery Listing Policy

(3) *"Status determinations for Pacific salmonid ESUs will be based on the likelihood of extinction of an entire ESU.* In assessing the likelihood of extinction of an ESU, NOAA Fisheries will recognize the necessity of conserving natural populations within the ESU, in line with the ESA's stated purpose to conserve "the ecosystems upon which endangered and threatened species depend," section 2(b). Natural populations that are stable or increasing, are spawning in the wild, and have adequate spawning and rearing habitat reduce the risk of extinction of the ESU. Such natural populations, particularly those with minimal genetic contribution from hatchery fish, can provide a point of comparison for the evaluation of the effects of hatchery fish on the likelihood of extinction of the ESU."

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Application of Hatchery Listing Policy

- For an ESU to be viable, it must include natural populations.
- Natural populations reduce ESU extinction risk provided:
    - they are stable or increasing
    - they have adequate spawning and rearing habitat

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Hatchery Listing Policy

(4) "Status determinations for Pacific salmonid ESUs generally consider four key attributes: abundance, productivity, genetic diversity, and spatial distribution. The effects of hatchery fish on the likelihood of extinction of an ESU will depend on which of the four key attributes are currently limiting the ESU, and how the hatchery fish within the ESU affect each of the attributes. The presence within an ESU of hatchery fish that are genetically no more divergent from a natural population in the ESU can reduce the likelihood of extinction of the ESU, and affect a listing determination, by contributing to increasing abundance and productivity of the ESU, by improving spatial distribution, and by serving as a source population for repopulating unoccupied habitat. Conversely, a hatchery program managed without adequate consideration of conservation effects can increase the likelihood of extinction of an ESU, and affect a listing determination, by reducing genetic diversity of the ESU and reducing the productivity of the ESU. In evaluating the effect of hatchery fish in reducing the likelihood of extinction of an ESU, the presence of a long-term hatchery monitoring and evaluation program is an important consideration."

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Application of Hatchery Listing Policy

- ESU status determinations are based on abundance, productivity, spatial structure, and diversity (i.e., VSP, *McElhany et al. 2000*).
- In assessing the extinction risk of an ESU in-total, the net contribution of ESU hatchery programs will be evaluated to determine if they modify the VSP risks currently limiting the ESU.